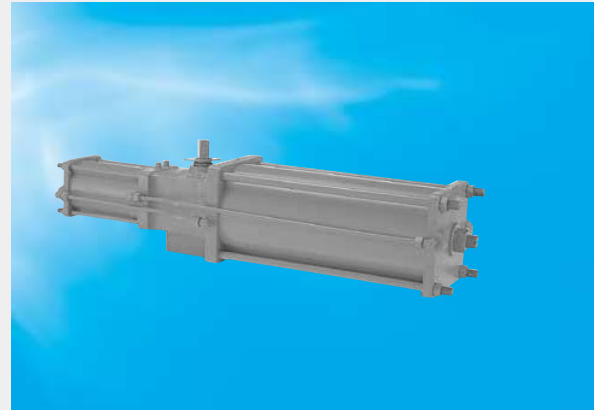


# TG-S

The TG-S type spring return pneumatic actuator is suitable for on/off control for medium and large sized valves. Air pressure and the spring force the piston inside the cylinder into a linear reciprocating motion, causing the pin coupled to the piston rod to rotate the output shaft.



| TG-S Specifications                 |                                  |         |          |          |
|-------------------------------------|----------------------------------|---------|----------|----------|
|                                     | TG-10S                           | TG-12S  | TG-14S   | TG-20S   |
| Torque (N·m) (0.4MPa)               | 260                              | 600     | 1250     | 3250     |
| Supply pressure (MPa)               | 0.4~0.7*1                        |         |          |          |
| Body shell max (MPa)                | 1.0                              |         |          |          |
| Port size                           | Rc3/8                            |         |          | Rc1/2    |
| Rotating angle                      | -3 to +93°                       |         |          |          |
| Operating fluid                     | Dry air                          |         |          |          |
| Working temperature range (degrees) | 0 to 80 degree C*2               |         |          |          |
| Rotating speed range (sec.)         | 4 to 20                          | 6 to 20 | 11 to 20 | 18 to 40 |
| Painting                            | Epoxy primer finish (Munsell N7) |         |          |          |

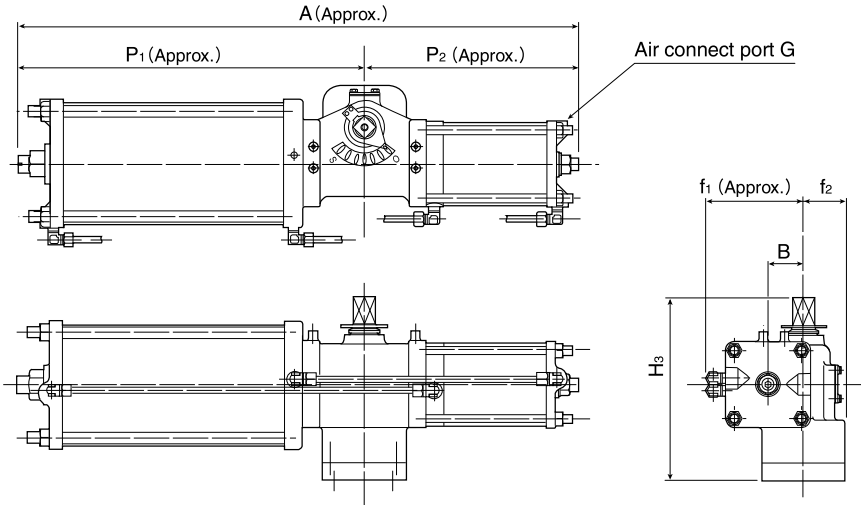
※ Supply pressure: 0.4MPa, without accessories

※ 1 If used for the TRITEC(TT1, TT2) with over 0.5MPa supply pressure. Please ask us about cylinder specifications.

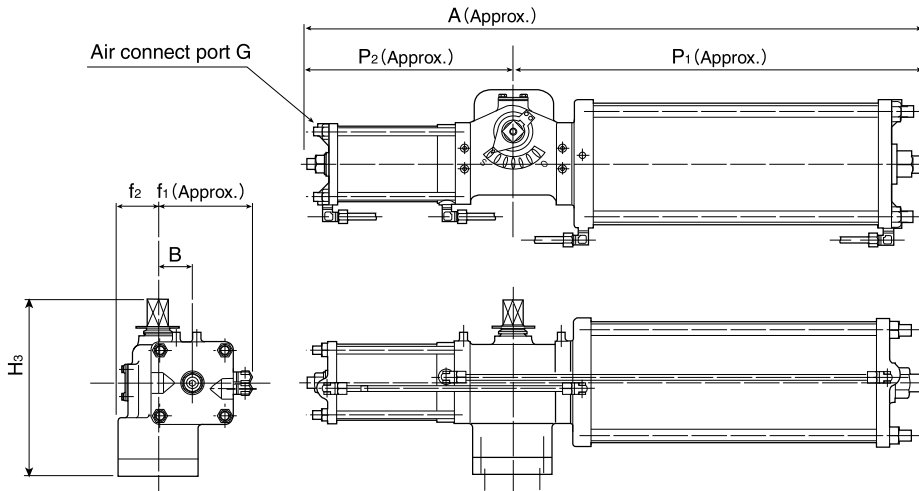
※ 2 Please ask us when used at working temperature of more than 60 degree C.

## TG-S Outer Dimensions

### 3K (Spring open)



### 3U (Spring shut)



## TG-S Dimensions

| Type   | Dimension (mm) |                |                |     |                |                |    |       |     | Approx. Mass (kg) |
|--------|----------------|----------------|----------------|-----|----------------|----------------|----|-------|-----|-------------------|
|        | A              | P <sub>1</sub> | P <sub>2</sub> | H   | f <sub>1</sub> | f <sub>2</sub> | B  | G     |     |                   |
| TG-10S | 945            | 585            | 360            | 307 | 165            | 70             | 60 | Rc3/8 | 50  |                   |
| TG-12S | 1080           | 720            | 360            | 307 | 206            | 70             | 60 | Rc3/8 | 95  |                   |
| TG-14S | 1255           | 865            | 390            | 340 | 257            | 70             | 67 | Rc3/8 | 191 |                   |
| TG-20S | 1655           | 1095           | 560            | 474 | 348            | 83             | 95 | Rc1/2 | 402 |                   |

#### Actuator

**New ELMY**  
41

**New MICON ELMY II**  
41

**PMK-SRF**  
4K

**SRJ**

4J

**LTKD**

4L

**New T-DYNAMO**  
7E/7F/7G

**TGA**

3A

**TG-S**

3K/3U

**3C**

**Diaphragm**

6X/6W/6Z/6A/6B

**Hydraulic cylinder**

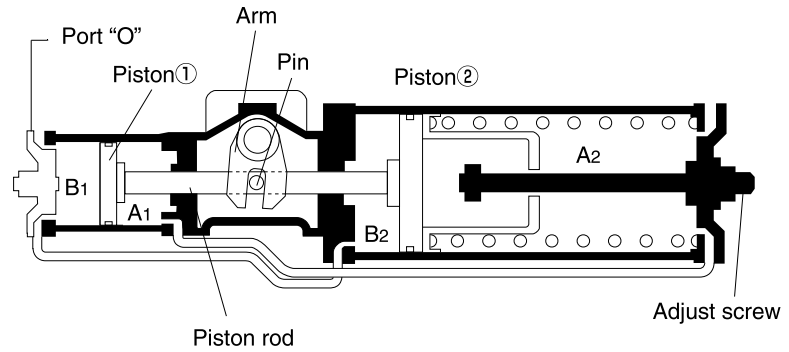
3H

**Manual Actuators**

17/1J/2U/2I/2S/2G/2R

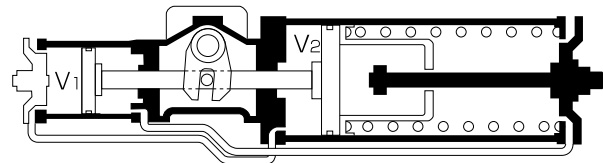
## TG-S Operation principle

As shown in the picture on the right, the chamber A<sub>1</sub> is connected to the chamber A<sub>2</sub> with copper tubes. The same is true for chamber B<sub>1</sub> and B<sub>2</sub>. Operating air is supplied through port "O" and fills chambers B<sub>1</sub> and B<sub>2</sub>. The air moves pistons ① and ② to the right, so that the spring is tensed. when thrust is transmitted to the pin on the piston rod to give the output shaft a force to produce counter-clockwise rotation through the arm, which rotates the shaft counter-clockwise. Residual air in chambers A<sub>1</sub> and A<sub>2</sub> is exhausted through port "S". During air failure mode, the spring forces the piston ② to move left, when thrust is transmitted to the pin on the piston rod to give an output shaft a force to produce clockwise rotation through the arm, which rotates the shaft clockwise.



## TG-S Air consumption

| Type   | Cylinder capacity ( ℓ ) |
|--------|-------------------------|
| TG-10S | 3.59                    |
| TG-12S | 6.36                    |
| TG-14S | 12.56                   |
| TG-20S | 36.29                   |



### (1) Required air consumption

Single-acting type

$$VS = V \left( \frac{P+0.1013}{0.1013} \right) N$$

VS : Single-acting type cylinder air consumption (Nℓ)

V : Cylinder capacity(ℓ)(V<sub>1</sub>+V<sub>2</sub>)

P : Working pressure (Mpa)

N : Operating frequencies in a given time (1 round trip=1)

### (2) Air consumption within a unit time

Single-acting type

$$CS = \frac{VS}{t}$$

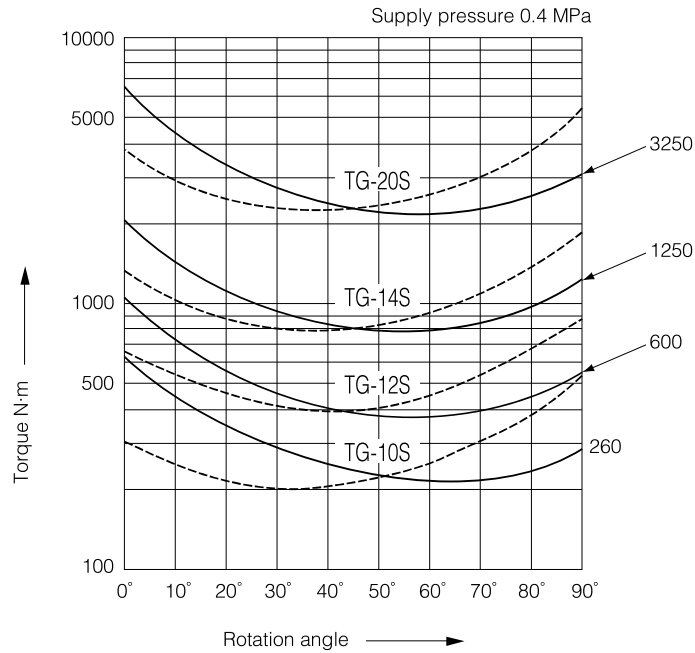
CS : Single-acting type cylinder air consumption (Nℓ/sec)

t : Unit time (sec)

Remark: The compressor should have a larger capacity than the air consumption calculated in above in (1) and (2).

## TGS Output Torque Curve

### ● Single-acting type (spring returned type)



**Notes :**

- This table shows 3U (spring shut). In the case of 3K (spring open), the rotation angle is reversed.
- ——— Lines show output torque curve by actuator
- - - - - Lines show output torque for spring force(air less)
- The table shows the torque at an operating air pressure of 0.4 Mpa.
- It can be used with an operating pressure between 0.4MPa and 0.7MPa.
- When the operating pressure is increased from 0.4MPa, the output at air fail does not change.

## TG-S Output Torque

(N·m)

| Type   | Supply pressure (0.4 MPa) |      | Spring power |      |
|--------|---------------------------|------|--------------|------|
|        | 0°                        | 90°  | 0°           | 90°  |
| TG-10S | 600                       | 260  | 260          | 600  |
| TG-12S | 1050                      | 600  | 600          | 1050 |
| TG-14S | 2000                      | 1250 | 1250         | 2000 |
| TG-20S | 6500                      | 3250 | 3250         | 6500 |

### Actuator

**New ELMY**  
41

New MICON ELMY II  
41

**PMK-SRF**  
4K

**SRJ**  
4J

**LTKD**  
4L

New T-DYNAMO  
7E/7F/7G

**TGA**  
3A

**TG-S**  
3K/3U

**3C**

**Diaphragm**  
6X/6W/6Z/6A/6B

Hydraulic cylinder  
3H

Manual Actuators  
17/1J/2U/2I/2S/2G/2R

## TG-S Accessories

| Accessory   | Type                | Manu-<br>facture | Part No.           | Double-acting type |        |        |        |
|---|---------------------|------------------|--------------------|--------------------|--------|--------|--------|
|   |                     |                  |                    | TG-10S             | TG-12S | TG-14S | TG-20S |
| Five-port/2-position,<br>non explosion-proof,<br>solenoid valve | Single solenoid     | TAIYO            | PCS2408-MC         | ○                  | ○      | ○      | —      |
|   |                     | TAIYO            | PCS2415-MC         | —                  | —      | —      | ○      |
| Five-port/2-position,<br>explosion-proof,<br>solenoid valve     | Single solenoid     | Kaneko           | MB15G-10AE12PU-TMS | ○                  | ○      | ○      | ○      |
| Filter regulator  |                     | SMC              | AW30-03B-X490      | ○                  | ○      | ○      | —      |
|   |                     | SMC              | AW40-04B-2         | —                  | —      | —      | ○      |
| Limit switch  | Non explosion-proof | Tomoe            | TMS-BOX            | ○                  | ○      | ○      | ○      |
|   |                     | Azbil            | 1LS1-J             | ○                  | ○      | ○      | ○      |
|   |                     | OMRON            | WLCA2              | ○                  | ○      | ○      | ○      |
|   | Explosion-proof     | Azbil            | 1LX7001            | ○                  | ○      | ○      | ○      |
| Azbil   |                     | VCX-7003         | ○                  | ○                  | ○      | ○      |        |
| Proximity switch  | M18 shielded        | OMRON            | E2E-X7D1-N         | ○                  | ○      | ○      | ○      |
|   | M18 non-shielded    | OMRON            | E2E-X14MD1         | ○                  | ○      | ○      | ○      |
|   | M30 shielded        | OMRON            | E2E-X10D1-N        | ○                  | ○      | ○      | ○      |
| Positioner  | Electro-pneumatic   | SSS              | TCE2000            | ○                  | ○      | ○      | ○      |
|   |                     | SMC              | TP8100             | ○                  | ○      | ○      | ○      |
|   |                     | Azbil            | AVP300             | ○                  | ○      | ○      | ○      |
|   | Pneumatic-pneumatic | SMC              | IP5100             | ○                  | ○      | ○      | ○      |
| Manual operating unit   | Manual gear unit    | Tomoe            | —                  | ○                  | ○      | ○      |        |
| Speed controller  |                     | SMC              | AS3000-03          | ★                  | ★      | ★      | —      |
|   |                     | SMC              | AS4000-04          | —                  | —      | —      | ★      |
| Silencer  |                     | SMC              | AN20-02            | ○                  | ○      | ○      | ○      |
|   |                     | SMC              | AN30-03            | ★                  | ★      | ★      | ○      |
|   |                     | SMC              | AN40-04            | —                  | —      | —      | ★      |
| Lock-up valve   |                     | SMC              | IL201-02           | ○                  | ○      | ○      | ○      |
| Operation recording unit  |                     | Tomoe            | TPro1100           | ○                  | ○      | ○      | ○      |

### Remarks:

1. Symbols in table mean the following: ★: Standard accessory, ○: Installable, —: Un-installable
2. This table shows typical accessory combinations. Accessories not shown in this table can also be installed.  
For details please consult us.

## TG-S Solenoid valves

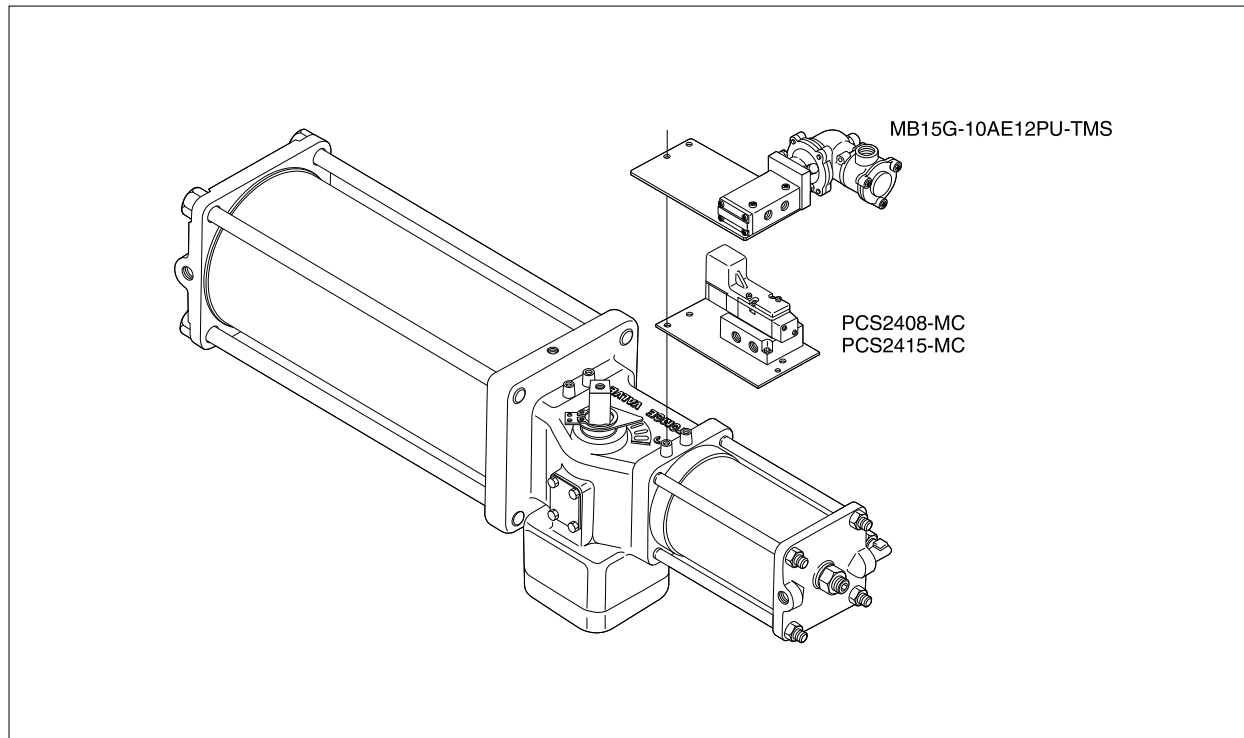
### ■ Purpose

The purpose of a solenoid valve is to use electrical signals to remotely change the air flow to operate the valves.

### ■ Standard specifications

| Item                     | Five-port/2-position, non explosion-proof, solenoid valve (single solenoid) | Five-port/2-position, non explosion-proof, solenoid valve (single solenoid) | Five-port/2-position, explosion-proof, solenoid valve (single solenoid) |
|--------------------------|---|---|---|
| Type                     | PCS2408-MC  | PCS2415-MC  | MB15G-10AE12PU-TMS  |
| Manufacturer             | TAIYO   | TAIYO   | Kaneko  |
| JIS symbol               |   |   |   |
| Applicable cylinder type | TG-10S to 14S   | TG-20S  | TG-10S to 20S   |
| Air connection port size | Rc3/8 (IN,OUT)<br>Rc1/4 (EXH)   | Rc1/2 (IN,OUT)<br>Rc3/8 (EXH)   | Rc3/8 (IN,OUT)<br>Rc1/4 (EXH)   |
| Effective sectional area | 30mm <sup>2</sup>   | 70mm <sup>2</sup>   | 11mm <sup>2</sup>   |
| Rated voltage            | AC100V/110V 50/60Hz<br>AC200V/220V 50/60Hz<br>DC24V                         | AC100V/110V 50/60Hz<br>AC200V/220V 50/60Hz<br>DC24V                         | AC100V, AC200V 50/60Hz<br>AC110V, AC220V 60Hz<br>DC24V                  |
| Class of insulation      | —   | —   | d2G4  |
| Wiring method            | Conduit terminal  | Conduit terminal  | Conduit terminal  |
| Conduit entry            | G1/2  | G1/2  | G1/2  |
| Manual operating         | Non lock bush type  | Non lock bush type  | Manual button lock type   |
| Operating temperature    | 5 to 50 degrees C   | 5 to 50 degrees C   | -20 to 60 degrees C   |
| Weight                   | 0.46kg  | 0.85kg  | 1.24kg  |

Remark: The above are standard TOMOE-compatible solenoid valves. It is also possible to install solenoid valves other than those listed above such as a port solenoid valve. For details, please consult us.



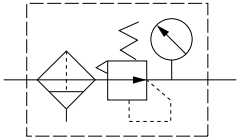
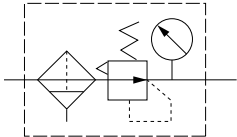
| Actuator  |
|---|
| <b>New ELMY</b><br>41                           |
| New MICON ELMY II<br>41                         |
| <b>PMK-SRF</b><br>4K                            |
| <b>SRJ</b><br>4J                                |
| <b>LTKD</b><br>4L                               |
| New T-DYNAMO<br>7E/7F/7G                        |
| <b>TGA</b><br>3A                                |
| <b>TG-S</b><br>3K/3U                            |
| <b>3C</b>                                       |
| <b>Diaphragm</b><br>6X/6W/6Z/6A/6B              |
| <b>Hydraulic cylinder</b><br>3H                 |
| <b>Manual Actuators</b><br>17/1J/2U/2I/2S/2G/2R |

## TG-S Filter regulator (Decompression valve with filter)

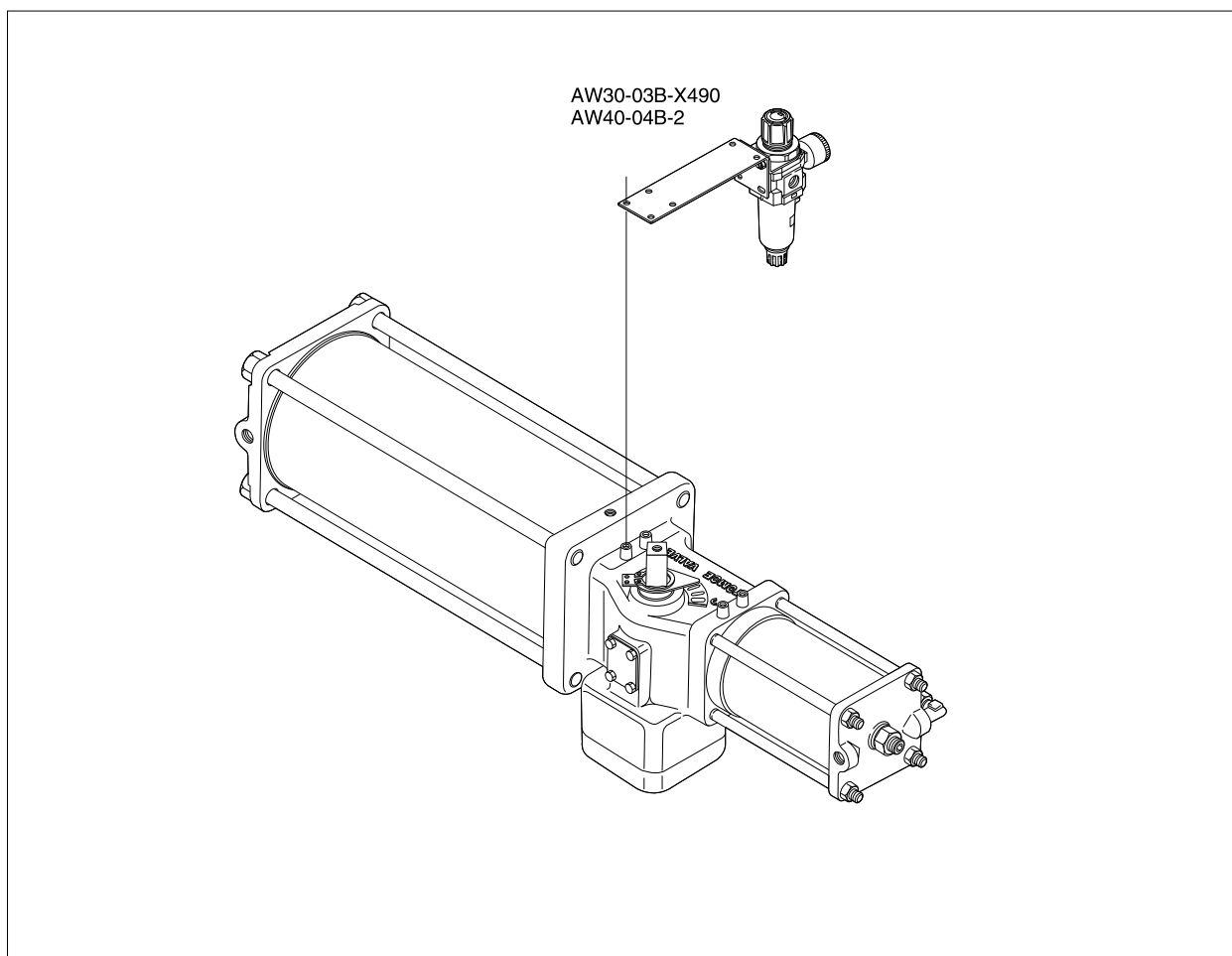
### ■ Purpose

Filter regulators are used to eliminate oil, water, and dust from the operating air in order to protect pneumatic accessories (solenoid valve and cylinder, etc.) and to keep operating pressure at an adequate and constant level.

### ■ Standard specifications

| Type                           | AW30-03B-X490   | AW40-04B-2   |
|--------------------------------|---|--|
| Manufacturer                   | SMC   | SMC  |
| JIS symbol                     |  |  |
| Applicable cylinder type       | TG-10S to 14S   | TG-20S   |
| Set pressure range             | 0.05 to 0.85MPa   | 0.05 to 0.85MPa  |
| Pressure gauge connection port | Rc1/8   | Rc1/4  |
| Operating temperature          | -5 to 60 degrees  | -5 to 60 degrees   |
| Air connection port size       | Rc3/8   | Rc1/2  |
| Attachment                     | 5 $\mu$ m   | 5 $\mu$ m  |
| Option                         | Auto drain for low and high temperatures  | Auto drain for low and high temperatures   |
| Weight                         | 0.79kg  | 1.52k  |

Remark: The above are standard TOMOE-compatible filter regulators. It is also possible to install filter regulators other than those listed above. For details, please consult us.

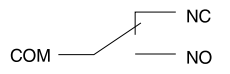
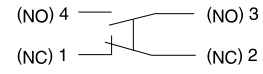
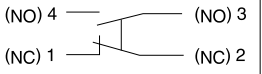
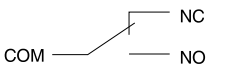


## TG-S Limit switches

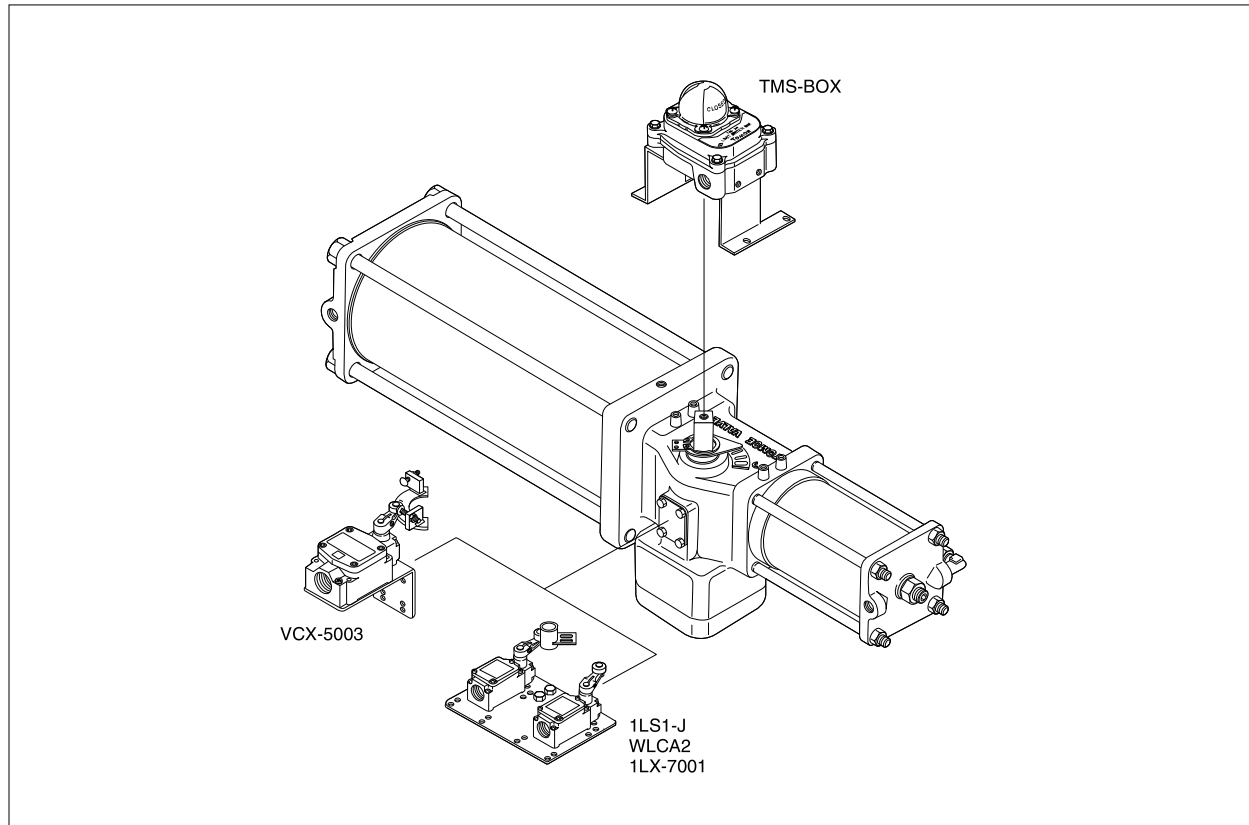
### ■ Purpose

Limit switches are used to convert the valve position (full close, full open, half open) into electric signals for lamp indication at a remote location.

### ■ Standard specifications

| Type   | TMS-BOX   | 1LS1-J<br>WLCA2   | 1LX-7001   | VCX-7003  |
|--|---|---|--|---|
| Manufacturer                                 | Tomoe   | Azbil (1LS1-J)<br>OMRON (WLCA2)   | Azbil  | Azbil   |
| Circuit                                      | Monopolar double-throw (1C, SPDT) X2<br> | Bipolar double interruption (1A1B, DPDT)<br> | Bipolar double interruption (1A1B, DPDT)<br> | Monopolar double-throw (1C, SPDT) X2<br> |
| Actuator                                     | Hinge roller lever type   | Roller lever type   | Roller lever type  | Adjustable roller lever type  |
| Class of insulation                          | IP67 (Option: ExdIIBT6)   | IP67  | IP67, Exde IIC T6  | IP67, Exde IIC T6   |
| Rated voltage<br>(resistance load)           | Standard  | Micro load specifications   |  |   |
|  | AC250V-1.6A<br>DC125V-0.6A  | AC125V-0.1A<br>DC30V-0.1A   | AC125V-10A<br>AC250V-10A<br>AC480V-10A<br>DC125V-0.8A<br>DC250V-0.4A   | AC125V-5A<br>AC250V-5A<br>DC125V-0.8A<br>DC250V-0.4A  |
| Minimum applicable load<br>(reference value) | DC30V 100mA   | DC24V 10mA(1LS1-J)<br>DC5V 160mA(WLCA2)   | DC24V 10mA   | DC24V 10mA  |
| Operating temperature                        | -10 to 80 degrees C   | 1LS1-J: -10 to 70 degrees C<br>WLCA2: -10 to 80 degrees C   | -10 to 60 degrees C  | -10 to 60 degrees C   |
| Conduit entry                                | 2-G1/2  | G1/2  | G1/2   | G3/4  |
| Option                                       | —   | Heat, cold and corrosion resistant  | Hydrogen anti-explosion (1LX5701)  | Waterproof (VCL-5003)   |
| Contacts                                     | Switch detection with one<br>(2 switches inside)  | On or off detection with one<br>Two for both on and off detection   | On or off detection with one<br>Two for both on and off detection  | Switch detection with one<br>(2 switches inside)  |
| Weight                                       | 0.98kg  | 0.28kg  | 0.74kg   | 0.77kg  |

Remark: The above are standard TOMOE-compatible limit switches. It is also possible to install limit switches other than those listed above. For details, please consult us. Since the rated load of the TMS-BOX micro load specification is smaller than that of the standard specification, a failure may occur if a current exceeding the rating is applied.



| Actuator  |
|---|
| <b>New ELMY</b><br>41                           |
| New MICON ELMY II<br>41                         |
| <b>PMK-SRF</b><br>4K                            |
| <b>SRJ</b><br>4J                                |
| <b>LTKD</b><br>4L                               |
| New T-DYNAMO<br>7E/7F/7G                        |
| <b>TGA</b><br>3A                                |
| <b>TG-S</b><br>3K/3U                            |
| <b>3C</b>                                       |
| <b>Diaphragm</b><br>6X/6W/6Z/6A/6B              |
| <b>Hydraulic cylinder</b><br>3H                 |
| <b>Manual Actuators</b><br>17/1J/2U/2I/2S/2G/2R |



## TG-S Proximity switches

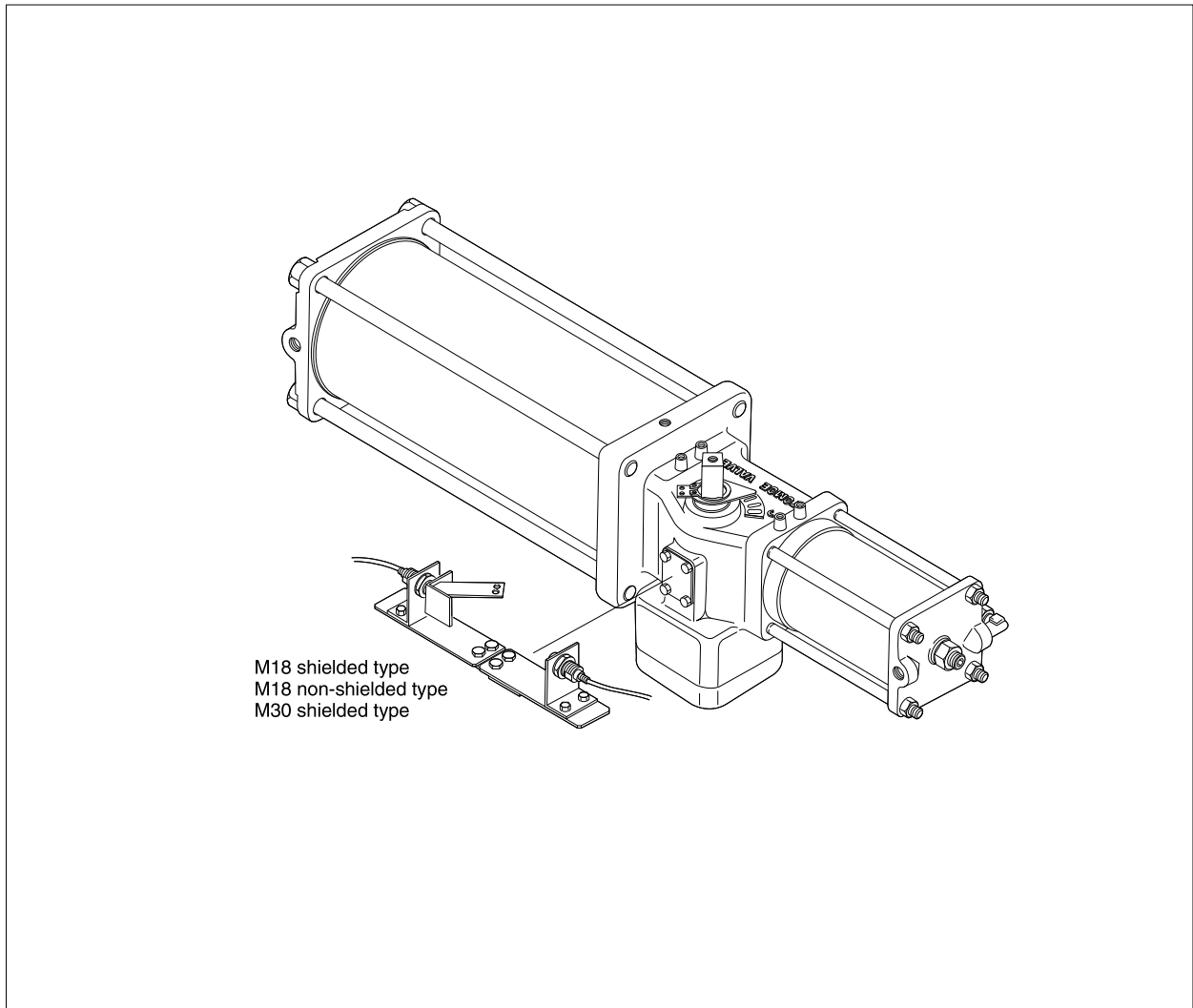
### ■ Purpose

Proximity switches are used to convert the valve position (full close, full open, half open) into electric signals for lamp indication at a remote location.

### ■ Standard specifications

| Product               | M18 shielded type<br>(Can be embedded in metal.)                  | M18 non-shielded type<br>(Cannot be embedded in metal.)           | M30 shielded type<br>(Can be embedded in metal.)                  |
|-----------------------|---|---|---|
| Type                  | E2E-X7D1-N  | E2E-X14MD1  | E2E-X10D1-N   |
| Manufacturer          | OMRON   | OMRON   | OMRON   |
| With power source     | DC 2-wire system  | DC 2-wire system  | DC 2-wire system  |
| Motion mode           | NO  | NO  | NO  |
| Detecting distance    | 0 to 5.6mm  | 0 to 11.2mm   | 0 to 8mm  |
| Object to be detected | Magnetic metal (stainless steel possible)                         | Magnetic metal (stainless steel possible)                         | Magnetic metal (stainless steel possible)                         |
| Power source voltage  | DC12 to 24V   | DC12 to 24V   | DC12 to 24V   |
| Current consumption   | 3 to 100mA  | 3 to 100mA  | 3 to 100mA  |
| Class of insulation   | IP67  | IP67  | IP67  |
| Operating temperature | -25 to 70 degrees C   | -25 to 70 degrees C   | -25 to 70 degrees C   |
| Connection            | Cord draw type (2m)   | Cord draw type (2m)   | Cord draw type (2m)   |
| Contacts              | On or off detection with one<br>Two for both on and off detection | On or off detection with one<br>Two for both on and off detection | On or off detection with one<br>Two for both on and off detection |
| Weight                | 0.13kg  | 0.13kg  | 0.18kg  |

Remark: The above are standard TOMOE-compatible proximity switches. It is also possible to install limit switches other than those listed above such as a DC 3-wire, AC 2-wire, AC/DC 2-wire or connector-type proximity switch. For details, please consult us.



## TG-S Positioners

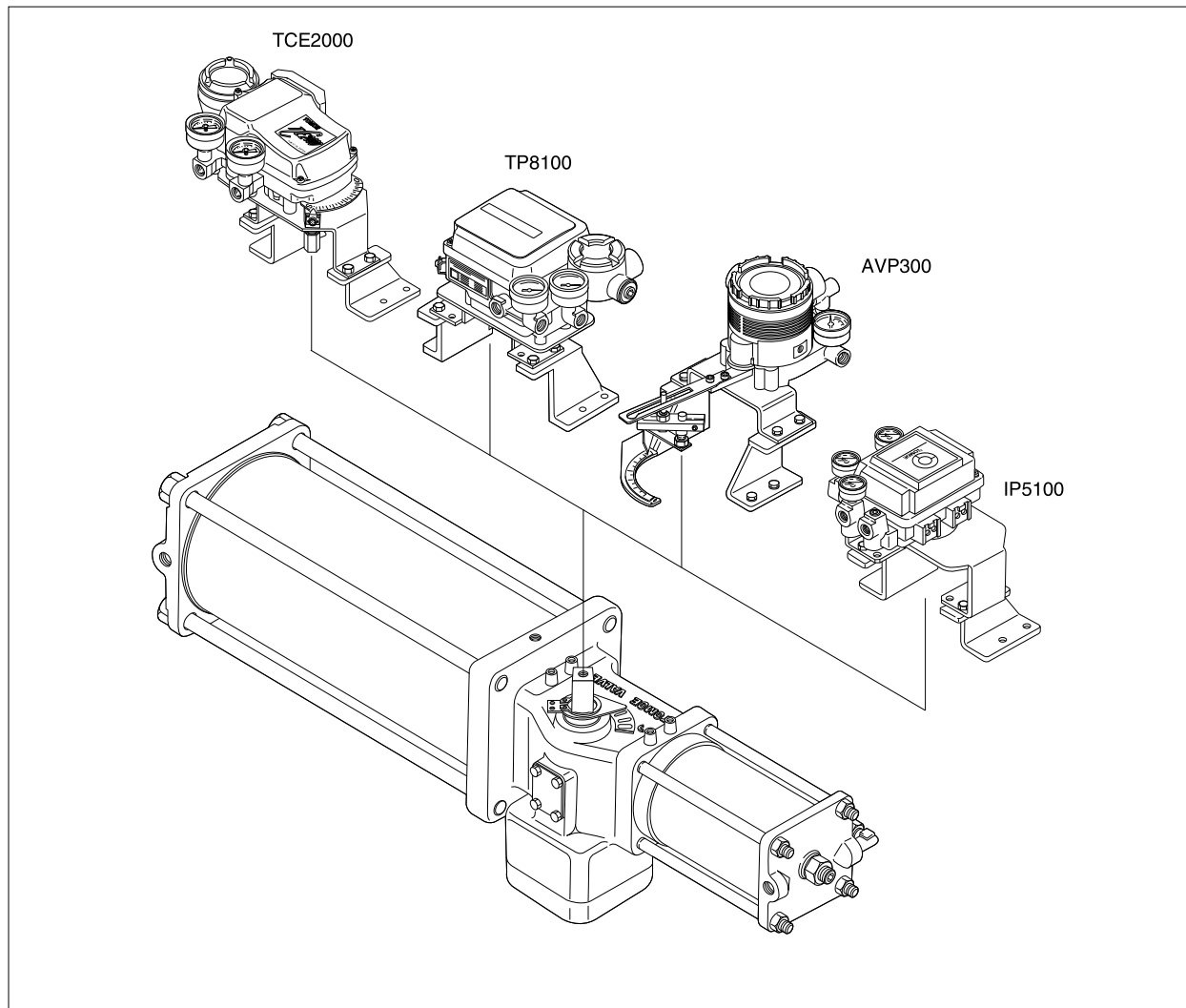
### Purpose

Positioners are used for quick and accurate control of the valve opening angle with pneumatic signals or 4-20mA DC input signals from a control room or controller unit.

### Standard specifications

|                          | Electro-Pneumatic, analog  | Electro-Pneumatic, analog   | Electro-Pneumatic, digital (smart)   | Pneumatic-Pneumatic            |
|--------------------------|--|---|--|--------------------------------|
| Type                     | TCE2000  | TP8100  | AVP300   | IP5100                         |
| Manufacturer             | Tomoe  | Tomoe   | Azbil  | SMC                            |
| Input signal             | 4 to 20mA  | 4 to 20mA   | 4 to 20mA  | 0.02 to 0.1MPa                 |
| Resistance               | 250Ω (4 to 20mADC)   | 235±15Ω (4 to 20mADC)   | 300Ω (4 to 20mADC)   | —                              |
| Supply air               | 0.14 to 0.7MPa   | 0.14 to 0.7MPa  | 0.14 to 0.7MPa   | 0.14 to 0.7MPa                 |
| Output flow rate         | 180L/min. or more (SUP=0.4MPa)   | 200L/min. or more (SUP=0.4MPa)  | 250L/min. or more (SUP=0.4MPa)   | 200L/min. or more (SUP=0.4MPa) |
| Air consumption          | Within 11L/min. (SUP=0.4MPa)   | Within 11L/min. (SUP=0.4MPa)  | Within 10L/min. (SUP=0.4MPa)   | Within 11L/min. (SUP=0.4MPa)   |
| Operating temperature    | -20 to 83 degrees C (Non explosion-proof)<br>-20 to 60 degrees C (Explosion-proof type d2G4) | -20 to 8 degrees C (Non explosion-proof)<br>-20 to 60 degrees C (Explosion-proof type d2G4) | -40 to 80 degrees C (Non explosion-proof)<br>-20 to 60 degrees C (Explosion-proof type d2G4) | -20 to 80 degrees C            |
| Class of insulation      | IP65, ExdIIBT6X  | IP67, ExdIIBT5  | IP65 (option: Exd2CT6X)  | —                              |
| Air connection port size | Rc1/4  | Rc1/4   | Rc1/4  | Rc1/4                          |
| Conduit entry            | 2-G1/2   | 2-G1/2  | 2-G1/2   | —                              |
| Sensitivity              | Within 0.5%FS  | Within 0.5%FS   | Within 1%FS  | Within 0.5%FS                  |
| Linearity                | Within ±1.5%FS   | Within ±2%FS  | Within ±1%FS   | Within ±2%FS                   |
| Hysteresis               | Within 1%FS  | Within 1%FS   | Within 1%FS  | Within 1%FS                    |
| Option                   | —  | —   | Analog signal (4 to 20 mA) output<br>Any special opening setting<br>Supports field bus.      | —                              |
| Weight                   | 2.3kg  | 2.6kg   | 2.8kg  | 1.2kg                          |

Remark: The above are standard TOMOE-compatible positioners. It is also possible to install positioners other than those listed above. For details, please consult us.



#### Actuator

**New ELMY**  
41

New MICON ELMY II  
41

**PMK-SRF**  
4K

**SRJ**  
4J

**LTKD**  
4L

New T-DYNAMO  
7E/7F/7G

**TGA**  
3A

**TG-S**  
3K/3U

**3C**

**Diaphragm**  
6X/6W/6Z/6A/6B

Hydraulic cylinder  
3H

Manual Actuators  
17/1J/2U/2I/2S/2G/2R

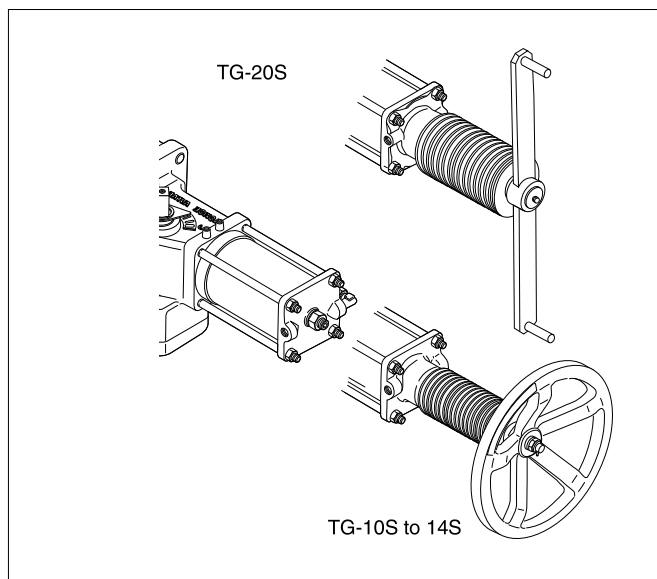
## TG-S Manual operation unit

### ■ Purpose

The operation unit is for manual operation of the pneumatic cylinder when air supply fails.

### ■ Standard specifications

|   | Function              | Type         | Applicable cylinder              | Remarks   |
|---|-----------------------|--------------|----------------------------------|---|
| 1 | Manual operation unit | Screw handle | Single acting type TG-10S to 20S | (1) Turn off the signal from solenoid valve and positioner when operation.<br>(2) Return position when restart automatic operation. |



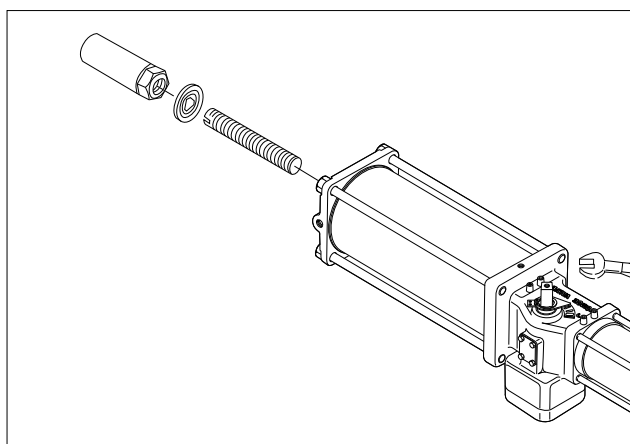
## TG-S Stroke adjusters

### ■ Purpose

The stroke adjuster sets the valve opening freely from the outside.

### ■ Standard specifications

| Function     | Type              | Applicable cylinder              | Remarks   |
|--------------|-------------------|----------------------------------|---|
| Adjust screw | Side adjust screw | Single acting type TG-10S to 20S | (1) Loose protecting cover.<br>(2) Tighten bolt to adjust the stroke angle.<br>(3) Fasten protecting cover. |

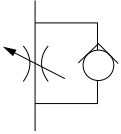
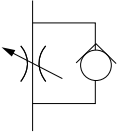


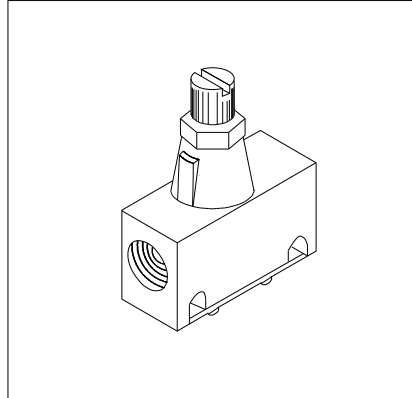
## TG-S Speed controllers

### ■ Purpose

Speed controller is used to adjust time of opening or closing.

### ■ Standard specifications

| Type                     | AS3000-03   | AS4000-04   |
|--------------------------|---|---|
| Manufacturer             | SMC   | SMC   |
| JIS symbol               |  |  |
| Applicable cylinder type | TG-10S to 14S   | TG-20S  |
| Needle revolution        | 8 rotations   | 8 rotations   |
| Adjustable range         | 5 to 15 secs.   | 5 to 15 secs.   |
| Operating temperature    | -5 to 60 degrees C  | -5 to 60 degrees C  |
| Air connection port size | Rc3/8   | Rc1/2   |
| Attachment               | Install to cylinder air connect port  | Install to cylinder air connect port  |
| Weight                   | 0.13kg  | 0.21kg  |



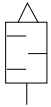


Remark: The above are standard TOMOE-compatible speed controllers. It is also possible to install speed controllers other than those listed above. For details, please consult us.

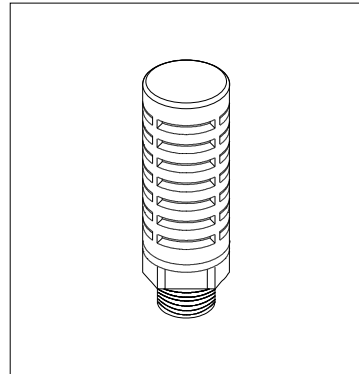
## TG-S Silencers

### ■ Purpose

Silencers eliminate noise at the exhaust ports on various kinds of pneumatic accessories.

### ■ Standard specifications

| Type                  | AN20-02   | AN30-03   | AN40-04   |
|-----------------------|---|---|---|
| Manufacturer          | SMC   | SMC   | SMC   |
| JIS symbol            |  |  |  |
| Effect of muffing     | 30dB (A)  | 30dB (A)  | 30dB (A)  |
| Operating temperature | 5 to 60 degrees C   | 5 to 6 degrees C  | 5 to 60 degrees C   |
| Port size             | Rc1/4   | Rc3/8   | Rc1/2   |
| Attachment            | Screw into exhaust port of solenoid valve.  | Screw into exhaust port of cylinder and solenoid valve.                             | Screw into exhaust port of cylinder and solenoid valve.                             |
| Weight                | 0.04kg  | 0.06kg  | 0.09kg  |




Remark: The above are standard TOMOE-compatible silencers. It is also possible to install silencers other than those listed above. For details, please consult us.

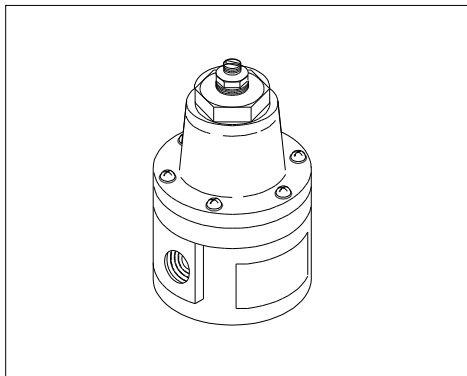
## TG-S Lock-up valves

### ■ Purpose

When air supply fails, the lock-up valve automatically stops the line until pressure is restored and keeps the operating unit of the cylinder at the stay-put position.

### ■ Standard specifications

| Type                            | IL201-02  |
|---------------------------------|---|
| Manufacturer                    | SMC   |
| JIS symbol                      |  |
| Effective sectional area        | 17mm <sup>2</sup>   |
| Operating temperature           | -5 to 60 degrees C  |
| Air connection port size        | Rc1/4   |
| Signal pressure connection port | Rc1/4   |
| Weight                          | 0.43kg  |



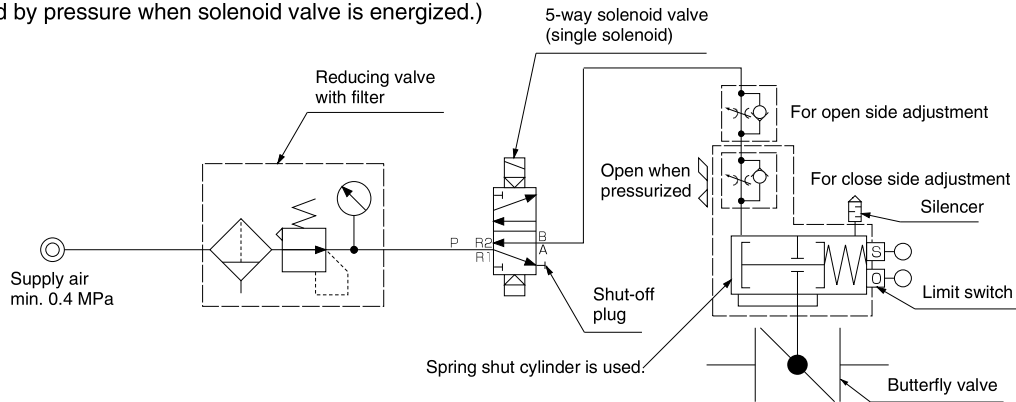
Remark: The above are standard TOMOE-compatible lock-up valves. It is also possible to install lock-up valves other than those listed above. For details, please consult us.

| Actuator  |
|---|
| <b>New ELMY</b><br>41                           |
| <b>New MICON ELMY II</b><br>41                  |
| <b>PMK-SRF</b><br>4K                            |
| <b>SRJ</b><br>4J                                |
| <b>LTKD</b><br>4L                               |
| <b>New T-DYNAMO</b><br>7E/7F/7G                 |
| <b>TGA</b><br>3A                                |
| <b>TG-S</b><br>3K/3U                            |
| <b>3C</b>                                       |
| <b>Diaphragm</b><br>6X/6W/6Z/6A/6B              |
| <b>Hydraulic cylinder</b><br>3H                 |
| <b>Manual Actuators</b><br>17/1J/2U/2I/2S/2G/2R |

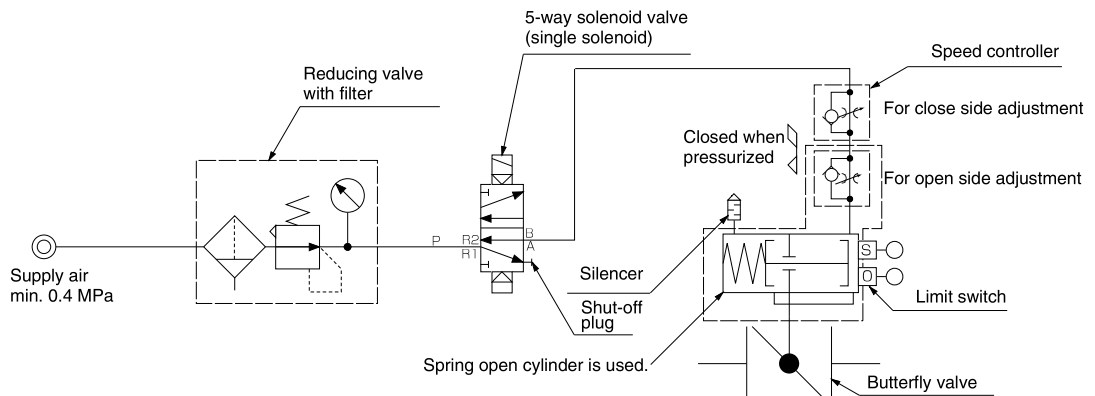
Example of standard air circuit for on/off operation (single-acting type)

Shown below are examples of standard circuits to operate the valve automatically to the safe side of open or close when the operating air supply or power supply fails in the middle of operation.

- 1 Butterfly valve closes when air supply falls.  
(Opened by pressure when solenoid valve is energized.)  
Butterfly valve closes when power supply falls.  
(Opened by pressure when solenoid valve is energized.)



- 2 Butterfly valve opens when power supply falls.  
(Closed by pressure when solenoid valve is energized.)  
Butterfly valve opens when air supply falls.  
(Closed by pressure when solenoid valve is energized.)

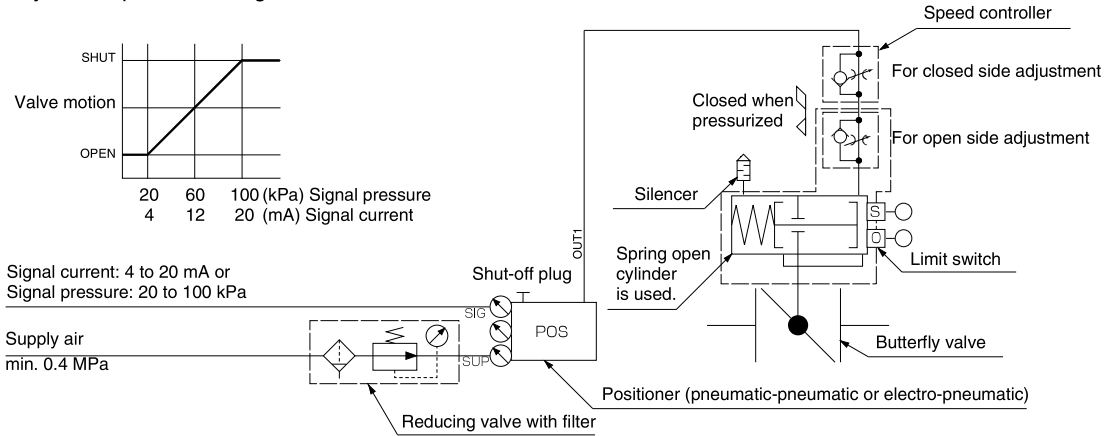


### Example of standard air circuit for control operation (single-acting type)

Shown below are examples of standard circuits in which the P/P or E/P positioner is attached to the butterfly valve driven by a single-acting pneumatic cylinder to adjust valve opening exactly and quickly in proportion to the signals transmitted by a local controller or from a remote control room. This will also detect the open/close position of the valve by a limit switch which sends feedback of the electric signals to the control room. When the operating air supply or power supply fails, the valve is automatically operated to the safe side of open or close.

#### 3 Direct action

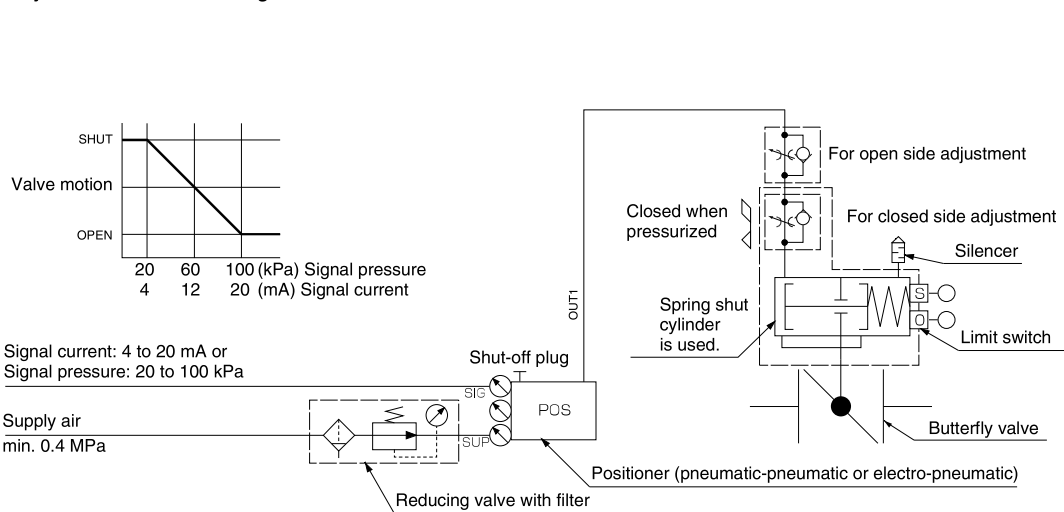
Butterfly valve closes when signal increases.  
Butterfly valve opens when signal decreases.



→Butterfly valve opens when air supply fails.

#### 4 Reverse action

Butterfly valve opens when signal increases.  
Butterfly valve closes when signal decreases.



→Butterfly valve closes when air supply fails.

| Actuator                                     |
|--|
| <b>New ELMY</b><br>41                        |
| New MICON ELMY II<br>41                      |
| <b>PMK-SRF</b><br>4K                         |
| <b>SRJ</b><br>4J                             |
| <b>LTKD</b><br>4L                            |
| New T-DYNAMO<br>7E/7F/7G                     |
| <b>TGA</b><br>3A                             |
| <b>TG-S</b><br>3K/3U                         |
| <b>3C</b>                                    |
| <b>Diaphragm</b><br>6X/6W/6Z/6A/6B           |
| <b>Hydraulic cylinder</b><br>3H              |
| <b>Manual Actuators</b><br>17/1J/2U/2S/2G/2R |